

# CENTER FOR BEAM PHYSICS SEMINAR

## “LEUTL: A SASE FEL operating down to 130 nm”

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Albert Ghiorso Conference Room (71-264), LBNL

### Abstract:

The first experiment of the Low-Energy Undulator Test Line (LEUTL) at the Advanced Photon Source (APS) is a self-amplified spontaneous emission (SASE) free-electron laser (FEL). This device employs the APS linear accelerator to produce the high-brightness beam required to drive the SASE process. The LEUTL tunnel proper holds a total of eight fixed-gap undulator devices as well as various light and electron beam diagnostics. Following the LEUTL hall are additional diagnostics in an end-station area outside of the radiation enclosure. After first achieving "saturation" in September 2000 at 530 nm followed by 385 nm a week later, we have been examining z-resolved radiation spectra, nonlinear harmonic generation, and electron beam microbunching as evidenced by coherent transition radiation. We have also recently pushed the operating wavelength down to 130 nm. Finally, the first user experiment on the LEUTL FEL will be installed this calendar year. This presentation will give the recent history and results of the first LEUTL experiment - the APS SASE FEL.

### Biographical information and research interests:

Sandra has been at Argonne National Laboratory since 1993. From 1993-1995, she was a member of the Energy Systems Division and worked on reclamation of lands. In 1995, she transferred to the Advanced Photon Source's Accelerator Systems Division and became a member of the Accelerator Physics Group under the direction Dr. Lee C. Teng for the following two years. Since then, she has served as the Chief of Operation of Research and Development in the Accelerator Operations Division. She has coordinated and participated in many aspects of the LEUTL project as well as maintaining her status as member of the Department of Accelerator Physics at MAX-Laboratory at Lund University where she recently completed her doctorate. She has also been heavily involved with the ANL/BNL high-gain harmonic generation experiment at Brookhaven's Accelerator Test Facility.